SAN DIEGO COMMUNITY COLLEGE DISTRICT
COLLEGE OF CONTINUING EDUCATION
COURSE OUTLINE

SECTION I

SUBJECT AREA AND COURSE NUMBER

CLTX 612

COURSE TITLE

ADVANCED DIGITAL PRINTING TECHNIQUES

TYPE COURSE

NON- FEE VOCATIONAL

CATALOG COURSE DESCRIPTION

This course builds on skills learned in Introduction to Digital Textile Printing, equipping students with in-depth knowledge and practical skills in two key digital printing methods: direct printing and dye-sublimation for manufacturing. These digital technologies have revolutionized the industry by offering versatility, speed, and customization. Students learn to create graphics with industry standard software, then print on products or textiles, roll-to-roll or by the piece. (FT)

LECTURE/LABORATORY HOURS

72 - 80

ADVISORIES

Completion of CLTX 611 Introduction to Digital Textile Printing with a grade of ‘C’ or better, or equivalent

RECOMMENDED SKILL LEVEL

Knowledge of general math and basic computer skills.

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
   SDCCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
   SDCCE students demonstrate effective communication skills.
3. Critical Thinking

SDCCE students critically process information, make decisions, and solve problems independently or cooperatively.

4. Personal and Professional Development
   SDCCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.
5. Diversity, Equity, Inclusion, Anti-Racism, and Access
   SDCCE students critically and ethically engage with local and global issues using principles of equity, civility, and compassion as they apply their knowledge and skills: exhibiting awareness, appreciation, respect, and advocacy for diverse individuals, groups, and cultures.

COURSE GOALS

1. Gain an in-depth understanding of textile product direct printing and dye sublimation, their underlying principles, and their respective applications in the cut and sew industry.
2. Increase design capabilities using industry standard digital graphic design software.
3. Gain an understanding of intellectual property regulations within the cut and sew textile printing industries.
4. Gain proficiency in operating industrial direct printing and dye-sublimation printing equipment.
5. Learn to source and select the textiles and fibers for the intended product application, with an understanding of pre-treatment and finishing processes for optimal print results.
6. Gain an understanding of the implementation of quality control measures to ensure consistent and high-quality print results, meeting industry standards.
7. Explore the latest developments, diverse applications, innovations, and emerging trends in digital printing.
8. Discuss the ecological impact of digital textile printing and current sustainable practices within the industry.
9. Gain an understanding of entrepreneurial mindset and its importance in the industry.

COURSE OBJECTIVES

Upon successful completion of the course, students will be able to:

1. Create an example resource library of textile products using the principles of direct printing and dye sublimation.
2. Create intricate image designs for print utilizing industry standard graphic design software.
3. Explain intellectual property creation rights and regulations for graphic images and pattern designs.
4. Demonstrate the operation of direct printing and dye-sublimation equipment housed in the classroom printing lab.

5. Create a textile and fiber characteristics and sourcing resource portfolio for direct printing and dye-sublimation.
6. Implement and evaluate quality control measures for printing techniques, applying corrections as needed.
7. Report on emerging developments, applications, innovations and operational costing in textile printing production and manufacturing.
8. Explain and apply ethical and ecologically sustainable digital printing practices.
9. Explain entrepreneurial and soft skills and their application in the industry and workplace.

SECTION II

COURSE CONTENT AND SCOPE

1. Introduction to Advanced Digital Printing Techniques and the Product & Textile Surface Treatments: Printing Certificate Program
   - 1.1. Clothing and Textiles (CLTX) programs and pathways
     - 1.1.1. San Diego College of Continuing Education (SDCCE) programs and pathways
     - 1.1.2. Credit by exam
   - 1.2. Course learning management system
     - 1.2.1. Canvas
     - 1.2.2. Other supporting software
2. Essential Entrepreneurial and Soft Skills in the Classroom and Work Environments
   - 2.1. Definition of entrepreneurial and soft skills
   - 2.2. Examples of entrepreneurial and soft skills
     - 2.2.1. Communication skills
     - 2.2.2. Conflict resolution skills
     - 2.2.3. Problem solving
     - 2.2.4. Design thinking
     - 2.2.5. Digital tool skills
3. Exploration of Advanced Digital Printing
   - 3.1. History
   - 3.2. Applications
   - 3.3. Innovations
   - 3.4. Manufacturing – micro-factories
     - 3.4.1. Cost factors
     - 3.4.2. On-demand
4. Advanced Digital Printing Equipment and Tools
   - 4.1. Direct to textile and product printers
   - 4.2. Direct to film printers, shakers and curing
   - 4.3. Dye-sublimation printers

- 4.4. Desktop equipment vs large format equipment
- 4.5. Other types of digital printers
- 4.6. Pretreatment equipment
- 4.7. Curing and finishing equipment
  - 4.7.1. Heat presses
  - 4.7.2. Ovens
- 4.8. Ink types
- 4.9. Papers

5. Textile and Product Selection
   - 5.1. Fibers, weaves, knits and their printing characteristics
   - 5.2. Sourcing
   - 5.3. Testing
   - 5.4. Cost analysis
6. Advanced Digital Graphic Design Software
   - 6.1. Software for printing tasks and preferences
   - 6.2. Image development with software tools
     - 6.2.1. Interface
     - 6.2.2. File types
     - 6.2.3. Color theory
     - 6.2.4. Color management
   - 6.3. Intellectual property
     - 6.3.1. Artificial intelligence and graphic image creation
7. Printing Machine Operation
   - 7.1. Operating software and systems
   - 7.2. Inks
   - 7.3. Print heads
   - 7.4. Paper
   - 7.5. Maintenance and disposal of by-products
   - 7.6. Safety
8. Curing and Finishing Processes
   - 8.1. Heat press transfer
   - 8.2. Oven curing
   - 8.3. Post-printing
9. Quality Control and Production Efficiency
   - 9.1. Principles of quality control in digital printing technologies and techniques
   - 9.2. Image registration
   - 9.3. Inspection, testing and correction techniques
   - 9.4. Sustainable digital printing practices and materials
   - 9.5. Reducing waste
10. Documentation of Skills
    - 10.1. Portfolio

11. Career Options and Diverse Textile and Product Printing Job Opportunities
    - 11.1. Payroll employee
    - 11.2. Self-employment
    - 11.3. Freelancing
    - 11.4. Employment resources
        - 11.4.1. Online marketplaces
        - 11.4.2. Social media
        - 11.4.3. Networking
12. Application of Sustainable Principles in the Context of Digital Printing
    - 12.1. Definition
    - 12.2. Impact of industry on the environment
    - 12.3. Zero waste

APPROPRIATE READINGS

Reading assignments may include, but are not limited to, subject matter textbooks, workbooks, instructor written handouts, industry-related publications, online help pages, articles posted on the internet, information from web sites, online libraries, resource manuals, videos and tutorials. Topics will be related to digital printing and the cut and sew industry.

WRITING ASSIGNMENTS

Appropriate writing assignments may include, but are not limited to:

1. Maintain a portfolio of class notes, technique samples and completed learning project actualizations.
2. Written plan of digital textile printing, where the student explains their chosen project theme and visual inspiration, and the production process is listed.
3. Calculate the cost of a digitally printed textile/product project.
4. Write a report on textile printing technology.

OUTSIDE ASSIGNMENTS

Outside assignments may include, but are not limited to:

1. Independent, further exploration of a class topic.
2. Independent research on printing developments and new trends in the cut and sew textile industry.
3. Practical application of digital printing and graphic design skills on textile products outside of class assignments.
4. Practical application of sustainable best practices learned in class.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments that demonstrate critical thinking may include, but are not limited to:

1. Student self-evaluation of completed class learning projects using designated rubric.
2. Prepare modeling and image files according to the specifications of the chosen printing technique.
3. Calculate the cost of the finished project.

EVALUATION

A student's grade will be based on multiple measures of performance related to the course objectives. The assessment will measure the development of independent critical thinking skills and the student's ability to perform advanced digital printing skills. Evaluation of the student's ability will be based on, but not limited to, the following criteria:

1. Completion of course design and printing projects.
2. Completion of resource portfolios demonstrating skills and sourcing information.
3. Completion of class participation requirement.

Upon successful completion of all courses included in the program, a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Methods of instruction may include, but are not limited to:

1. Classroom and streamed lectures
2. Demonstrations
3. Journaling
4. Laboratory
5. Classroom, virtual, or online discussions
6. Web-based resources
7. Work based learning opportunities
8. Job shadowing
9. Field trips
10. Guest speakers
11. Audio-Visual resources
12. Video resources
13. Collaborative learning
14. Individual/small group instruction

This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

Digital Textile Design, Melanie Bowles and Ceri Isaac, Lawrence King Publishing, current edition

Supplies:
The student provides required printing blanks or substrates as instructed in course syllabus. Students must have at least a 32 GB USB flash drive for all classes and lab work. It is highly recommended to have a computer or laptop available for use outside of the campus classroom and lab.

PREPARED BY: Shirley Pierson DATE November 2023

REVISED BY: _____ DATE _____

Instructors must meet all requirements stated in Policy 5500 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 5500
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog